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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/747,657	12/30/2003	Byoung Kee Kim	1315-050	1579

22429 7590 03/25/2005

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EXAMINER	
MAI, NGOCLAN THI	

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/747,657	KIM ET AL.	
	Examiner	Art Unit	
	Ngoclan T. Mai	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim (US Patent No. 6,293,989).

Kim et al. teaches a method for making cemented carbide comprising:

- spray-drying of a water solution of salts containing W, Ti, and Co for producing initial powder;
- Preliminary heat treatment of the initial powder to remove the hygroscopic components and moisture contained in the initial powder after spray-drying,
- Ball-milling in order to grind the oxide powder and mix it homogeneously with an addition of carbon; and
- Heating the powder after milling in an atmosphere of reductive or non-oxidative gas for reduction and carburization. see abstract and col. 2, line 24 to col. 3, line 13. Note that the preliminary heat treatment is

equivalent to applicant's calcining step, which remove the salt to form metal oxides.

While Kim et al does not specify employing carbon particles in nanosized range, Kim et al. teaches that in the ball-milling of the powder mixture, oxide powder were ground to ultra fine size without any phase change and mixed with carbon, which were penetrated into the pores of the oxide powder, see col. 4, lines 14-23. Note that this indicates that carbon particle must be very small in order to penetrate the pores of the oxide powder. Since ultra fine powder is conventional known as powder having submicron size, i.e. less than 1 micron, the carbon particle used is expected to be much smaller than 1 micron in size in order to penetrate the pore of a submicron particle. Thus carbon particle used by Kim et al. is expected to be in nanosized range.

Regarding claims 3 and 7: Kim et al. teaches this limitation in col. 1, lines 30-34.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4-5 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US Patent No. 6,293,989) in view of Hardy et al. (US Patent No. 3,488,291)

Kim et al teaches the method substantially as claimed. The differences between the claims and Kim et al are that Kim et al. does not specifically teach the temperature for the heat treating or calcining and the temperatures for the reduction and reduction and carburization.

Regarding claims 4 and 8: Kim et al, however, teaches the heat treating should not be less than 200 °C, see col. 3, lines 63-67. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to heat treating the spray dried salt mixture taught by Kim at temperature higher than 200 °C. Determination of an optimum or workable range of temperature by routine experimentation would have been obvious.

Regarding claims 5 and 9: Kim et al. teaches heating the ball-milled powder mixture in an atmosphere of reductive or non-oxidative gas at the temperature of 1000 °C to convert the metal oxide to metal carbide, see col. 4, lines 25-33.

Hardy et al. teaches that metal oxide can react with carbon to directly reduce to metal carbide or it can be first reduced to free metal and then carburized to metal carbide, see col. 4, lines 63-72.

Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Kim et al. by first reducing the metal oxide to free metal and then carburizing the free metal to metal carbide as taught by Hardy since Hardy et al.

teaches that either way would work. As for the temperature for each stage, since Kim et al. teaches heating around 1000 °C, it would have been obvious to one of ordinary skill in the art to determine the optimum or workable range for each stage to obtain the desired result given. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation." See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d (Fed.cir), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-9 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of copending

Application No. 10/747,655. Although the conflicting claims are not identical, they are not patentably distinct from each other because Ti and Ta are belong to refractory metal and substitute one for another would have been obvious.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoclan T. Mai whose telephone number is (571) 272-1246. The examiner can normally be reached on 9:30-6:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ngoclan T. Mai
Primary Examiner
Art Unit 1742

n.m.